(19) World Intellectual Property Organization International Bureau



(43) International Publication Date 7 April 2005 (07.04.2005)

PCT

(10) International Publication Number WO 2005/030831 A2

- (51) International Patent Classification⁷: H01G 9/00, H01M 10/40
- C08G 61/12,
- (21) International Application Number:

PCT/JP2004/014444

(22) International Filing Date:

24 September 2004 (24.09.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

2003-332653 60/508,868 25 September 2003 (25.09.2003) JP 7 October 2003 (07.10.2003) US

- (71) Applicant (for all designated States except US): SHOWA DENKO K. K. [JP/JP]; 13-9, Shiba Daimon 1-chome, Minato-ku, Tokyo 105-8518 (JP).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): OHATA, Hideki [JP/JP]; c/o Corporate R & D Center., Showa Denko K.K., 1-1, Ohnodai 1-chome, Midori-ku, Chiba-shi, Chiba 267-0056 (JP). SAIDA, Yoshihiro [JP/JP]; c/o Corporate R & D Center., Showa Denko K.K., 1-1, Ohnodai 1-chome, Midori-ku, Chiba-shi, Chiba 267-0056 (JP). NAIJO, Shulchi [JP/JP]; c/o Corporate R & D Center., Showa Denko K.K., 1-1, Ohnodai 1-chome, Midori-ku, Chiba-shi, Chiba 267-0056 (JP).

- (74) Agent: OHIE, Kunihisa; Ohie Patent Office, Selva-Ningyocho 6F, 14-6, Nihonbashi-Ningyocho, 2-chome, Chuo-ku, Tokyo 103-0013 (JP).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: π -CONJUGATED COPOLYMER PRODUCTION METHOD THEREOF AND CAPACITOR USING THE COPOLYMER

(57) Abstract: The present invention relates to a novel π -conjugated copolymer having a high conductivity, obtained through chamically oxidative polymerization of a thiophene-based unit represented by formula (IV) and a pyrrole-based unit represented by formula (III) at a low temperature, preferably in the presence of a compound containing a counter anion, and production method therefor, and further relates to an article coated with the copolymer, a solid electrolytic capacitor using the copolymer as solid electrolyte and production method for the capacitor.